UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,064	01/04/2002	Joe Gaidjiergis	319578007US1	3578

27076 7590 02/27/2006

DORSEY & WHITNEY LLP
INTELLECTUAL PROPERTY DEPARTMENT
SUITE 3400
1420 FIFTH AVENUE
SEATTLE, WA 98101

EXAMINER	
BUTLER, PATRICK	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/039,064	GAIDJIERGIS ET AL.
	Examiner	Art Unit
	Patrick Butler	1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 17 February 2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 17-61 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 17-61 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 04 January 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claims 19, 25, and 32 is withdrawn in further review of prior art previously made of record. Rejections based on the reference(s) follow.

Response to Amendment

The Applicant's Amendments and Accompanying Remarks, both filed 21 November 2005 and 16 February 2006, have been entered and have been carefully considered. The Amendments filed 21 November 2005 give the result that Claims 56-61 are new, Claims 17-19, 23, 25, 48, and 55 are amended, no Claims are canceled, and Claims 17-61 are pending. The Amendments presented 16 February 2006 maintain the language of the claims as presented on 21 November 2005.

In view of Applicant's amendment to the Specification, the Examiner withdraws the previously set forth objection as detailed in the Priority section of the Office Action dated 20 May 2005.

In view of Applicant's amendment to Claims 48 and 55, the Examiner withdraws the previously set forth objection as detailed in the Specification section of the Office Action dated 20 May 2005.

The terminal disclaimer filed on 21 November 2005 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of US Patent Number 6,468,453 has been reviewed and is accepted. The terminal disclaimer has been recorded.

In view of Applicant's amendment of claim 18 to eliminate duplicate language, the Examiner withdraws the previously set forth objection as detailed in the Claim Objections section of the Office Action dated 20 May 2005.

In view of Applicant's amendment of claims 19 and 32, the Examiner withdraws the previously set forth 35 U.S.C. 112, second paragraph objection as set forth in the Claim Rejections - 35 USC § 112 section of the Office Action dated 20 May 2005. A modified version remains for Claim 25 as detailed below.

Despite these advances, the invention as currently claimed is not found to be patentable for reasons herein below.

The Text of those sections of Title 35, US Code not included in this action can be found in a prior Office Action.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claims 19 and 58 recite that the penetrating punches go "0.0625-0.**0**1875" inches. However, this range as recited by the specification is listed as "0.0625-0.1875" inches. As such, the specification does not provide proper antecedent basis for the claimed punch penetration depth in claims 19 and 58.

The examiner believes that the recited claimed punch penetration depth in claims 19 and 58 is a typographical error and was intended to be "0.0625-0.1875" inches as provided in the applicant's original disclosure. As such, for the purpose of this Office

action, the examiner has interpreted claims 19 and 58 as reciting a punch penetration depth of “0.0625-0.1875” inches.

An additional correction of the following is required: Claim 25 recites that the penetrating punches go “0.25-0.31625” inches; however, this recited range for the penetrating punches (e.g., “0.25-0.31625” inches) is only disclosed in the specification with reference to the thickness of the panel within the context of incomplete panel punching. As such, the specification does not provide proper antecedent basis for the claimed punch penetration depth in claims 25.

The examiner believes that the recited claimed punch penetration depth in claim 25 is a typographical error and was intended to be “0.0625-0.1875” inches as provided in the applicant's original disclosure. As such, for the purpose of this Office action, the examiner has interpreted claim 25 as reciting a punch penetration depth of “0.0625-0.1875” inches.

Claim Rejections - 35 USC § 112

Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 25 recites a fiber-cement panel having a thickness of approximately 0.25-0.31625 inches. Claim 25 further recites that the punches penetrate into the panel to a depth of approximately 0.25-0.31625 inches without passing the punches completely through the panel. These recitations are confusing when taken in view of each other. Specifically, if the panel has a maximum thickness of about 0.25 inches, it would be

impossible for the punches to penetrate into the panel to a depth of about 0.25 inches without passing the punches completely through the panel because the penetration depth would be the thickness of the panel. The examiner believes that the claimed maximum penetration depth is a typographical error and was intended to be about 0.1875 inches as disclosed in the specification. As such, for the purpose of this Office action, the examiner has interpreted claim 25 as reciting penetrating the punches into the panel to a depth of approximately 0.0625-0.1875 inches without passing the punches completely through the panel.

Claim Rejections - 35 USC § 103

Claims 17-19, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,962,941 (Kober) in view of U.S. Patent No. 4,580,374 (Quinnell).

Claims 17 and 18

Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a length, a width and a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate) and a lower

platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes; driving the punches at least substantially simultaneously into and through at least a portion of the thickness of the fiber-cement panel to form a plurality of apertures in the fiber-cement panel by ejecting plugs from the fiber-cement panel through the holes in the support plate) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches comprises penetrating the punches into the fiber-cement panel along the full length of the fiber-cement panel in one stroke of the punches).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official

notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Claim 19

The discussion of Kober and Quinnell as applied to claim 17 above applies herein.

Kober and Quinnell do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obvious recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Claim 31

Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement; depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate and a plurality of punches projecting from the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (forming a plurality of apertures in the fiber-cement panel at least substantially simultaneously by driving the punches at least substantially simultaneously through the fiber-cement panel).

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed

hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Claim 32

The discussion of Kober and Quinnell as applied to claim 31 above applies herein.

Kober and Quinnell do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Claims 20-22 and 33-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,962,941 (Kober) in view of U.S. Patent No. 4,580,374 (Quinnell) and U.S. Patent No. 4,246,815 (Hugo) when taken in view of the applicant's admitted prior art in paragraph #006 of the applicant's original disclosure.

Claims 20-22 and 33-35

The discussion of Kober and Quinnell as applied to claims 17 and 31 above applies herein.

Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a concave contact

face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a

result-effective variable in the process of Kober in view of Quinnell, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance

would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Claims 36 and 37

The discussion of Kober and Quinnell as applied to claim 31 above applies herein.

Neither Kober nor Quinnell specifically teaches providing a plurality of biasing elements coupled to the punch assembly wherein the biasing elements are compressible, resilient member projecting from the punch plate adjacent to the punches and withdrawing the

punches from the fiber-cement panel comprises pressing resilient biasing members against the fiber-cement panel adjacent to at least a subset of the plurality of punches when the punches penetrate into the fiber-cement panel. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (providing a plurality of biasing elements coupled to the punch assembly, the biasing elements being compressible, resilient members projecting from the punch plate adjacent to a punch; and withdrawing the punches from the fiber-cement panel by pressing the biasing elements against the fiber-cement panel proximate to at least a subset of the punches as the punches penetrate the fiber-cement panel) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered

analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Claims 38 and 42

Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches having a first cross-sectional dimension coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly so that a first side of the panel faces the punch assembly and a second side of the panel faces the support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes having a second cross-sectional dimension; driving the punches through at least a portion of the fiber-cement panel to form a plurality of openings in the

fiber-cement panel) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches at least substantially simultaneously).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the perforations are tapered (i.e., have the first dimension of the punches at the first side of the panel and the second dimension of the holes at the second side of the panel) and that the second cross-sectional dimension of the holes is larger than the first cross-sectional dimension of the punches. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims). As illustrated in the marked-up version of Figure 3

below, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of tapered openings in the fiber-cement panel; driving the punches through at least a portion of the fiber-cement panel to form a plurality of openings in the fiber-cement panel that have the first dimension of the punches at the first side of the panel and the second dimension of the holes at the second side of the panel) and that the diameter of the die cavity 21 is larger than the diameter of the punch 15 (a plurality of holes having a second cross-sectional dimension larger than the first cross-sectional dimension of the punches). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punch / support arrangement taught by Hugo in the process of Kober in view of Quinnell to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Kober, Quinnell, and Hugo do not specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Claims 39 and 43

The discussion of Kober, Quinnell, Hugo and the admitted prior art as applied to claims 38 and 42 above applies herein.

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25

and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Claims 40 and 44

The discussion of Kober, Quinnell, Hugo and the admitted prior art as applied to claims 38 and 42 above applies herein.

Neither Kober nor Quinnell specifically teaches driving the punches completely through the fiber-cement panel to eject the plugs from the fiber-cement panel. However, as illustrated in Figure 3, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches comprises passing the punches along a stroke path completely through the fiber-cement panel and ejecting the plugs from the panel in the direction of the punch stroke). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to drive the punches completely through the fiber plate in the process of Kober in view of Quinnell as taught by Hugo to assure that the plugs were completely ejected from the fiber plate.

Claims 41 and 45-48

The discussion of Kober, Quinnell, Hugo and the admitted prior art as applied to claims 38 and 42 above applies herein.

Kober further teaches that each of the punch means 8 comprises a pin 10 carried on a plate 9b removably secured to the upper portion 9a of the upper platen 9 (the punches are arranged in an array and have a diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 includes a plate having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11, for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (the holes are arranged in a corresponding array and have a diameter) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches along a punch stroke into the fiber-cement panel until the punches eject plugs from the panel in the direction of the punch stroke).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Hugo, one of ordinary skill in the art would have obviously determined the

optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of

Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo.

Claims 49 and 50

Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a length, a width and a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches having a first cross-sectional dimension coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly so that a first side of the panel faces the punch assembly and a second side of the panel faces the support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support

assembly having a support plate with a plurality of holes having a second cross-sectional dimension; driving the punches through at least a portion of the fiber-cement panel to form a plurality of openings in the fiber-cement panel) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches at least substantially simultaneously; driving the punches comprises punching holes in the fiber-cement panel along a full length of the panel in one punch stroke).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system. Neither Kober nor Quinnell specifically teaches that the second cross-sectional dimension of the holes is larger than the first cross-sectional dimension of the punches. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a

extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims). As illustrated in the marked-up version of Figure 3 below, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of openings in the fiber-cement panel) and that the diameter of the die cavity 21 is larger than the diameter of the punch 15 (a plurality of holes having a second cross-sectional dimension larger than the first cross-sectional dimension of the punches). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punch / support arrangement taught by Hugo in the process of Kober in view of Quinnell to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Neither Kober nor Quinnell specifically teaches pressing a compressible biasing element against the first side of the fiber-cement panel as the punches move along the

punch stroke. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (pressing a compressible biasing element against the first side of the fiber-cement panel as the punches move along the punch stroke) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo).

Kober, Quinnell, and Hugo do not specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed

range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Claim 51

The discussion of Kober, Quinnell, Hugo and the admitted prior art as applied to claim 49 above applies herein.

Neither Kober nor Quinnell specifically teaches driving the punches completely through the fiber-cement panel to eject the plugs from the fiber-cement panel. However, as illustrated in Figure 3, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches comprises passing the punches along a stroke path completely through the fiber-cement panel and ejecting the plugs from the panel in the direction of the punch stroke). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to drive the punches completely through the fiber plate in the process of Kober in view of Quinnell as taught by Hugo to assure that the plugs were completely ejected from the fiber plate.

Claims 52-55

The discussion of Kober, Quinnell, Hugo and the admitted prior art as applied to claim 49 above applies herein.

Kober further teaches that each of the punch means 8 comprises a pin 10 carried on a plate 9b removably secured to the upper portion 9a of the upper platen 9 (the punches are arranged in an array and have a diameter) (column 3, lines 24-27;

Figures). Kober further teaches that the lower platen 5 includes a plate having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11, for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (the holes are arranged in a corresponding array and have a diameter) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches into the fiber-cement panel to form openings).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Hugo, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Note that, as discussed above with regard to claim 49, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the

workpiece W (driving the punches comprises moving the punches into the fiber-cement panel to form openings having a first dimension at the first side of the panel and a second dimension larger than the first dimension at the second side of the panel).

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of

Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

Claims 23-25 and 56-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,962,941 (Kober) in view of U.S. Patent No. 4,580,374 (Quinnell) and U.S. Patent No. 4,985,119 (Vinson et al.).

Claims 23 and 24

Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes; driving the punches at least substantially simultaneously into and through at least a portion of the thickness of the fiber-cement panel to form a plurality of apertures in the fiber-cement panel by ejecting plugs from the fiber-cement panel through the holes in the support surface); and lifting the trays 7 off of the lower platen 5

to pull the board free at the region of the tray holes (withdrawing the punches from the fiber-cement panel without delaminating the fiber-cement panel at the apertures) (column 1, lines 13-17; column 2, lines 53-64; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches comprises penetrating the punches into the fiber-cement panel along the full length of the fiber-cement panel in one stroke of the punches). Note that one of ordinary skill in the art would have recognized, when viewing the teachings of Kober as a whole, that the lifting off of the trays would have obviously been performed without any significant delaminating at the apertures.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to

0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Neither Kober nor Quinnell specifically teaches that the fiber plate may comprise cellulosic material instead of asbestos. However, Vinson et al. teach a method for making fiber-reinforced structures and building materials from water-curable inorganic binders, such as cement and calcium silicate, and fibers wherein the traditional asbestos fibers are replaced with natural cellulosic fibers such as softwood fibers, hardwood fibers and a variety of vegetable fibers (the fiber-cement panel comprising cement, cellulosic material, and a binder) (column 1, lines 11-29). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use cellulosic fibers as a replacement for the asbestos fibers in the process of Kober in view of Quinnell as taught by Vinson et al. to provide a fiber reinforcement with fewer safety and health concerns as set forth in Vinson et al.

Claim 25

The discussion of Kober, Quinnell, and Vinson as applied to claim 23 above applies herein.

Kober, Quinnell, and Vinson do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober, Quinnell, and Vinson through routine experimentation based upon driving out the plugs.

Claims 56 and 57

Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel comprising cement and having a length, a width and a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in

the lower platen 5 (the support assembly having a support plate with a plurality of holes; driving the punches at least substantially simultaneously into and through at least a portion of the thickness of the fiber-cement panel to form a plurality of apertures in the fiber-cement panel by ejecting plugs from the fiber-cement panel through the holes in the support plate) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches comprises penetrating the punches into the fiber-cement panel along the full length of the fiber-cement panel in one stroke of the punches).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill

in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Neither Kober nor Quinnell specifically teaches that the fiber plate may comprise cellulosic material instead of asbestos. However, Vinson et al. teach a method for making fiber-reinforced structures and building materials from water-curable inorganic binders, such as cement and calcium silicate, and fibers wherein the traditional asbestos fibers are replaced with natural cellulosic fibers such as softwood fibers, hardwood fibers and a variety of vegetable fibers (the fiber-cement panel comprising cement, cellulosic material, and a binder) (column 1, lines 11-29). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use cellulosic fibers as a replacement for the asbestos fibers in the process of Kober in view of Quinnell as taught by Vinson et al. to provide a fiber reinforcement with fewer safety and health concerns as set forth in Vinson et al.

Claim 58

The discussion of Kober, Quinnell, and Vinson as applied to claim 23 above applies herein.

Kober, Quinnell, and Vinson do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing

completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober, Quinnell, and Vinson through routine experimentation based upon driving out the plugs.

Claims 26-30 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,962,941 (Kober) in view of U.S. Patent No. 4,580,374 (Quinnell), U.S. Patent No. 4,985,119 (Vinson et al.) and U.S. Patent No. 4,246,815 (Hugo) when taken in view of the applicant's admitted prior art in paragraph #006 of the applicant's original disclosure.

Claims 26-28

The discussion of Kober, Quinnell and Vinson et al. as applied to claim 23 above applies herein.

Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a concave contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that

the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Vinson et al.,

one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober, Quinnell nor Vinson et al. specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously

determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell and Vinson et al. as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Claims 29 and 30

The discussion of Kober, Quinnell and Vinson et al. as applied to claim 23 above applies herein.

Neither Kober, Quinnell nor Vinson et al. specifically teaches providing a plurality of biasing elements coupled to the punch assembly wherein the biasing elements are compressible, resilient member projecting from the punch plate adjacent to the punches and withdrawing the punches from the fiber-cement panel comprises pressing resilient

biasing members against the fiber-cement panel adjacent to at least a subset of the plurality of punches when the punches penetrate into the fiber-cement panel. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (providing a plurality of biasing elements coupled to the punch assembly, the biasing elements being compressible, resilient members projecting from the punch plate adjacent to a punch; and withdrawing the punches from the fiber-cement panel by pressing the biasing elements against the fiber-cement panel proximate to at least a subset of the punches as the punches penetrate the fiber-cement panel) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell and Vinson et al. as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's

admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Claims 59-61

The discussion of Kober, Quinnell, and Vinson as applied to claim 56 above applies herein.

Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a concave contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second

diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30%

of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching

apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph #006. Specifically, paragraph #006 of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Response to Arguments

Applicant's arguments filed 21 November 2005 and 16 February 2006 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC 103 rejections. Applicant's arguments appear to be on the grounds that:

1) Quinnell does not teach punching.

2) Punching asbestos is not taught by Quinnell, as plastic is used instead.

3) The health aspects and performance of punching are not suitable.

4) There is different motivation for using the dies of Hugo.

5) The motivation to use Hugo is hindsight.

6) Using the exact measurements of a drawing does not provide exact information.

The Applicant's arguments are addressed as follows:

1-3) Kober is the primary reference, which is used to show punching asbestos and its utility. Therefore, Quinnell is not used to show how to punch and what type of material to punch.

4) In response to applicant's argument that combining Hugo prevents breakage in additional aspects of the reference, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

5) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

6) Applicant's arguments regarding measuring figures of references as filed 16 February 2006 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a different interpretation of the previously applied reference (optimization).

Declaration

The declaration under 37 CFR 1.132 filed 21 November 2005 is insufficient to overcome the rejection of claims 17-61 based upon the references applied under 35 U.S.C. 103 as set forth in the last Office action because: The declaration fails to set forth facts showing the invention to be non-obvious.

The declaration includes the suggestion to not use asbestos materials, though art of record clearly shows punching asbestos; that the combination of references as described would not cut, though no test is conducted; and indicates commercial success, though the success is both pertaining to the product and not the method, and does not refer to the attributes indicated in the claims that are incorporated in the invention's commercial success.

It states that the claimed subject matter solved a problem that was long standing in the art. However, there is no showing that others of ordinary skill in the art were working on the problem and if so, for how long. In addition, there is no evidence that if persons skilled in the art who were presumably working on the problem knew of the teachings of the above cited references, they would still be unable to solve the problem. See MPEP § 716.04.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is 571-272-8517. The examiner can normally be reached on Monday through Friday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PB
Patrick Butler
Assistant Examiner
Art Unit 1732

Michael P. Colaianni
MICHAEL P. COLAIANNI
SUPERVISORY PATENT EXAMINER